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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/921,358	08/02/2001	Tomoharu Kurita	212865	6028

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EXAMINER

KRUER, KEVIN R

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 02/27/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/921,358

Applicant(s)

KURITA ET AL.

Examiner

Kevin R Kruer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 9-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 17 and 18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restriction

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-8, 7 and 18, drawn to a flexible metal-clad laminate comprising a metal foil and a heat resistant resin film, classified in class 428, subclass 458.
- II. Claims 9-16, drawn to a method of making a metal-clad laminate comprising a metal foil and a heat resistant resin film, classified in class 427, subclass 379.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product could be made by a materially different process. For example, the metal foil and the resin layer could be laminated together. Alternatively, the product could be made by applying the resin as a solution, but without the predrying step.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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During a telephone conversation with John Kiryk on Friday, February 21, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-8, 17, and 18. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-16 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-5, 7, 8, 17, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Numata et al (US 4,792,476). Numata teaches a low thermal expansion aromatic polyimide that exhibits high elasticity and heat resistance (col 1, lines 3+). The polyimide comprises repeating units such as formula III (see columns 3 and 4). Said polyimide of formula III is disclosed by applicant as suitable to be used for the claimed "heat resistant resin film." The polyimide may be bonded with metal layers such as Cu, Cr, Au, Ag, Ni, AL, Fe, Co, Zn, Pb, Sn, Ti, Mo, Pd etc and alloys thereof (col 8, lines

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34+). The laminate may be utilized as a flexible circuit board (col 8, lines 60+).

Furthermore, the polyimide may be copolymerized with polyamide-acid (col 13, lines 42+) in order to improve the polymer's flexibility (col 6, lines 56+). Said copolymer of a polyamide acid and a polyimide of formula III would contain repeating units that read on formula 1 of claim 8.

With respect to the claimed insolubility content, initiation tear strength, elastic modulus retentivity, dimensional stability, sold heat resistance, adhesion, and radius of curvature, of the claimed "heat resistant polymer," the examiner takes the position that the polyimide and polyamide-imide polymers taught in Numata inherently possess said properties because said polymers comprise the same composition as the polymers disclosed by Applicant.

With respect to the method limitations of claims 2 and 3, the examiner takes the position that the laminate made by the method taught in Numata is identical to the claimed laminate. The courts have held that the method of making a product does not patentably distinguish a claimed product from a product taught in the prior art unless it can be shown that the method of making the product inherently results in a materially different product. In the current application, no such showing has been made.

2. Claims 1-5, 7, 8, 17, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohmura et al (US 4,377,652). Ohmura teaches an article for electrical use such as insulative substrates, electrical circuit boards and electrical elements, wholly or partly consisting of an aromatic polyamide-imide (abstract). The aromatic polyimide-amide has excellent thermal resistance, humidity resistance, adhesion and

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electrical characteristics (col 1, lines 7+). The polymer may comprise repeating units of the formula I, wherein Ar is selected to be the residue listed on column 3, line 11. Said polymer reads on formula 1 of claim 8. The laminate may be made by applying a solvent composition comprising the aromatic polyamide-imide on the metal layer and removing the solvent (col 12, lines 1+).

With respect to the claimed insolubility content, initiation tear strength, elastic modulus retentivity, dimensional stability, sold heat resistance, adhesion, and radius of curvature, of the claimed "heat resistant polymer," the examiner takes the position that the polyimide and polyamide-imide polymers taught in Ohmura inherently possess said properties because said polymers comprise the same composition as the polymers disclosed by Applicant.

With respect to the method limitations of claims 2 and 3, the examiner takes the position that the laminate made by the method taught in Ohmura is identical to the claimed laminate. The courts have held that the method of making a product does not patentably distinguish a claimed product from a product taught in the prior art unless it can be shown that the method of making the product inherently results in a materially different product. In the current application, no such showing has been made.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5, 7, 8, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al (US 3,936,575) in view of Frost (US 3,984,375).

Watanabe teaches a metal-clad laminate for flexible printed circuit boards comprising a resin selected from polyvinyl chloride, polyamide-imide, and polyimide (col 1, lines 9+).

Watanabe does not teach a polyamide-imide resin that reads on the claimed "heat resistant resin." However, Frost teaches a polyamide-imide resin consisting essentially of a repeating unit of the formula in the abstract). When R is the radical of column 2, line 11, the formula reads on formula 1 of claim 8. When R is the radical of column 2, line 27, the formula reads on formula 2 of claim 8. The polyamide-imide possesses thermal stability, toughness, good flexibility, and other properties (col 1, lines 8+). The polymer is useful as films for electrical insulation (col 1, lines 8+). Thus, it would have been obvious to one of ordinary skill in the art to utilize the polyimide-amide polymers taught in Frost as the resin in the printed circuit board taught in Watanabe because said polymers possess thermal stability, toughness, and good flexibility.

With respect to the claimed insolubility content, initiation tear strength, elastic modulus retentivity, dimensional stability, sold heat resistance, adhesion, and radius of curvature, of the claimed "heat resistant polymer," the examiner takes the position that the polyimide and polyamide-imide polymers taught by Watanabe in view of Frost necessarily possess said properties because said polymers comprise the same composition as the polymers disclosed by Applicant.

With respect to the method limitations of claims 2 and 3, the examiner takes the position that the laminate made by the method taught by Watanabe in view of Frost is

identical to the claimed laminate. The courts have held that the method of making a product does not patentably distinguish a claimed product from a product taught in the prior art unless it can be shown that the method of making the product inherently results in a materially different product. In the current application, no such showing has been made.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over (a) Ohmura et al (US 4,377,652), (b) Numata et al (US 4,792,476), or (c) Watanabe et al (US 3,936,575) in view of Frost (US 3,984,375), as applied to claims 1-5, 7, 8, 17, and 18 above, and further in view of Akahoshi (US 4,970,107). Ohmura, Frost, and Watanabe in view of Frost are relied upon as above. But none of the references teach that the surface of the heat resistant resin that contacts the metal layer should have the claimed surface roughness. However, Akahoshi teaches that a copper layer for a printed circuit board may be surface roughness to the have pit-like recesses having a diameter of from about 0.1-1.0um (col 1, lines 6+). Said roughness improves adhesion. Therefore, it would have been obvious to one of ordinary skill in the art to roughen a copper layer of a printed circuit board to have a roughness of 0.1-1um in order to improve adhesion between the resinous layer and the copper layer.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin R Kruer whose telephone number is 703-305-0025. The examiner can normally be reached on Monday-Friday from 7:00a.m. to 4:00p.m.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau, can be reached on (703) 308-2367. The fax phone number for the organization where this application or proceeding is assigned is 703-305-5408.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

X-RN-


Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700